MULTIMEDIA UNIVERSITY®

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2018/2019

DCS5078 – DATABASE SYSTEMS

(DIT/DBIS Students)

11 MARCH 2019
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENT:

1. This question paper consists of **SEVEN** pages with 20 Multiple Choice Questions and **THREE** structured questions.

2. **SECTION A**: Answer **ALL** questions. Please shade your answers on the OMR sheet provided.

3. **SECTION B**: Answer **ALL** questions. Please write your answers in the answer booklet provided.

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

Answer ALL questions in this section. Shade your answers on the OMR sheet provided.

1. When attribute is set as mandatory, it means that _____.

   A. The attribute must be a primary key
   B. No foreign key is required for the entity
   C. The attribute cannot be null
   D. The attribute can be null

2. _____ is the process of data generation, data storage and data retrieval.

   A. Data model block
   B. Data management
   C. Data dictionary
   D. Data information

3. A good decision making is based on the _____ that is accurate, relevant and timely.

   A. Raw data
   B. Building of block
   C. Information
   D. Knowledge

4. Which of the following best describes the statement below?

   "The end-users are able to describe the characteristic and relationship of data in certain database".

   A. Raw data
   B. Information data
   C. Metadata
   D. Dirty Data

5. Which of the following is **FALSE** about role of DBMS?

   A. DBMS allows data to be shared.
   B. DBMS receives and translate application requests into operations required to fulfil the requests.
   C. DBMS presents the end user with an integrated view of the data.
   D. DBMS provides database's internal complexity from application programs to end user.

Continued...

6. Which of the following is one of the disadvantages of relational database model?

   A. Hardware and system software overhead
   B. Structural independence
   C. Mastering SQL
   D. Conceptual complexity

7. Which of the following best describes the function of a foreign key?

   A. A foreign key is a key that doesn't belong in the table.
   B. A foreign key is at the primary key of one table repeated in another table in order to create a relationship between the tables.
   C. A foreign key is redundant data.
   D. A foreign key is a field telling what language the data is in.

8. What are the main components for entity relationship model?

   I. Database
   II. Entity
   III. Relationship
   IV. Attribute

   A. I, II, III
   B. I, III, IV
   C. I, II, IV
   D. II, III, IV

9. Which of the following is best example of composite attribute?

   A. Address
   B. Age
   C. Marital Status
   D. Last Name

10. _____ is an attribute whose value is calculated from other attributes.

   A. Multivalued attribute
   B. Derived attribute
   C. Simple attribute
   D. Composite identifier

Continued...

11. In relationship of model, _____ is to express the minimum and maximum number of entity occurrences associated with one occurrence of related entity.

    A. participants
    B. connectivity
    C. cardinality
    D. entity

12. Which of the following involves with more than two entities for relationship degree?

    A. Binary relationship
    B. Unary relationship
    C. Ternary relationship
    D. Recursive relationship

13. Which of the following best describes the statement below?

    "To eliminate the repeating groups, to identify the primary key, to identify all dependencies."

    A. First Normal Form
    B. Second Normal Form
    C. Third Normal Form
    D. Boyce-Codd Normal Form

14. _____ is an attribute that functionally depends on another non-key attribute.

    A. Transitive dependency
    B. Fully dependency
    C. Partial dependency
    D. Multivalued dependency

15. The rule that state all attributes must be dependent on the primary key is referring to _____.

    A. First Normal Form
    B. Boyce-Codd Normal Form
    C. Third Normal Form
    D. Fourth Normal Form

Continued...

16. Which of the following is **TRUE** about the defect in unnormalized table?

    A. No simple strategies for creating virtual tables known as views.
    B. Data updates are more efficient because tables are smaller.
    C. A simple indexing is more accurate.
    D. It reduces data redundancy.

17. In UML diagram, relationship is represented as _____.

    A. Object identifier
    B. Association
    C. Multiplicities
    D. Inheritance

18. Which of the following is **TRUE** about Unified Modeling Language (UML)?

    A. UML has limited components to graphically model different aspects of an entire software system.
    B. There are no similarities between UML and ER modeling.
    C. Cardinality also modeled as cardinality in UML diagram.
    D. A primary key is modeled as Object identifier in UML diagram.

19. Based on the UML notation, a(n) _____ attribute can be modeled by prefixing a slash (/) to the attribute's name.

    A. composite
    B. derived
    C. multi-valued
    D. primary

20. In a Unified Modeling Language, a primary key is modeled as a(n) _____.

    A. Class
    B. Attribute
    C. Inheritance
    D. Object identifier

Continued...

SECTION B: STRUCTURED QUESTIONS (30 MARKS)

Answer ALL questions in this section. Write your answers in the answer booklet provided.

Question 1 **(10 Marks)**

DIT Animal Foster House is a non-profit organisation taking care of rescued pet animals. Potential adopters will come to the foster house and if they have decided to adopt an animal, they must register by providing their name, contact number, address, city, postcode and state.

There are several types of common pet animal such as cats, dogs and rabbits to choose from. The details about each animal such as name, age and weight are also recorded in the database. Each animal will be tagged by a unique ID for tracking and each animal is placed in individual cage for their own protection and comfort.

In few cases, some animals can be returned to the Animal Foster House if the adopter finds that the animal is not suitable for their family members. It is important to capture the details about adoption history such as adoption date and returned date. The returned animals then will be open for new future adoption.

Our staff who are entertaining the potential adopters will also be responsible to record important data into our database. The database will also track which staff handling the data entry for audit purposes.

Based on the situation given above, draw a complete Entity Relationship Diagram using the **Crow's Foot** notation which include:

(i) All entities and attributes
(ii) Relationships
(iii) Connectivity and relationship participation
(iv) Primary and foreign keys

Continued...

Question 2 (10 Marks)

Given the following sample staff data for CDP staff directory:

Staff Table

Staff_ID	Staff_Name	Commission	Gender	Salary	ContactNo	Position
10001	Maria Jane	400.00	F	400.00	013-6963232	Trainee
10002	Kelly Cane	450.00	M	500.00	*null*	Trainee
10003	Michael John	500.00	M	550.00	013-5442525	Salesman
10004	Sophia Allie	1000.00	F	1100.00	*null*	Asst. Manager
10005	Jeffry Sew	1200.00	M	1300.00	011-7895869	Asst. Manager
10006	Mana Manne	2500.00	F	2300.00	012-8529636	Manager

Write the SQL statements for the following:

a) Display the *Staff_ID* and *Staff_Name* for staff without any contact number.

b) List the *Staff_Name*, *Position* and *ContactNo* of staff who are not Asst. Manager.

c) Display all the staffs' details where *Staff_Name* starts with "Ma".

d) Calculate and display the total salary which is *Salary* added with *Commission* and sort the list in ascending order based on the *Staff_Name*.

e) Display the number of staff for each position in the staff directory.

f) Show the minimum and maximum salary of staff in this staff directory.

g) Delete the records belonging to Maria Jane and Michael John.

Continued...

Question 3 **(10 Marks)**

CDP College keeps records of schedule for the FYP presentations in an Excel spreadsheet. The management decided to convert it to a proper database format and ask you propose a database design for the FYP Presentation schedule. Please refer to Appendix A for the details.

a) Draw a dependency diagram for 1NF [6 marks]

b) Write the relational schema for 2NF [4 marks]

End of Page

Appendix A: Final Exam

PanelID	Panel	TitleID	Project_Type	FYP_Title	Start	End	Date	Venue	Spv_ID	Supervisor
1001	Suhayl	FYP01	Web Based	Tuition Management System	9.00 a.m.	10.00 a.m.	9/12/2018	MR2006	1005	Raju
		FYP04	Multimedia	Spa and Massage	10.00 a.m.	11.00 a.m.	10/12/2018	MR2007	1002	Saira
1002	Saira	FYP01	Web Based	Tuition Management System	9.00 a.m.	10.00 a.m.	9/12/2018	MR2006	1005	Raju
		FYP02	Web Based	Restaurant Booking System	10.00 a.m.	11.00 a.m.	9/12/2018	MR2006	1006	Khairil
		FYP03	Mobile App	Restaurant Navigation App	9.00 a.m.	10.00 a.m.	10/12/2018	MR2007	1004	Sunita
1003	Rozita	FYP03	Mobile App	Restaurant Navigation App	9.00 a.m.	10.00 a.m.	10/12/2018	MR2007	1004	Sunita
		FYP05	Web Based	Party Planner	11.00 a.m.	12.00 p.m.	9/12/2018	MR2006	1001	Suhayl
1005	Raju	FYP02	Web Based	Restaurant Booking System	10.00 a.m.	11.00 a.m.	9/12/2018	MR2006	1006	Khairil
		FYP04	Multimedia	Spa and Massage	10.00 a.m.	11.00 a.m.	10/12/2018	MR2007	1002	Saira
1006	Khairil	FYP05	Web Based	Party Planner	11.00 a.m.	12.00 p.m.	9/12/2018	MR2006	1001	Suhayl